

AAR Perspective on SNF Transportation

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Outline

- S-2043 – Performance Specification for Trains Used to Carry High Level Radioactive Materials
- Dedicated Trains
- Summary



S-2043- Performance Specification for Trains Used to Carry High Level Radioactive Materials (HLRM)

- Includes all cars in the trains including buffer cars, security cars
- Requires static and dynamic modeling before construction
- Requires full scale characterization, static, and dynamic testing of each car and the train
- 100,000 mile evaluation period



Performance Standard for Trains Used to Carry HLRM (cont.)

- Roadworthiness exceeds standard freight car requirements
 - Enhanced performance trucks
- Requires Electronically Controlled Pneumatic (ECP) Brakes
 - Reduced stopping distance
 - Provides conduit for on-board defect detection

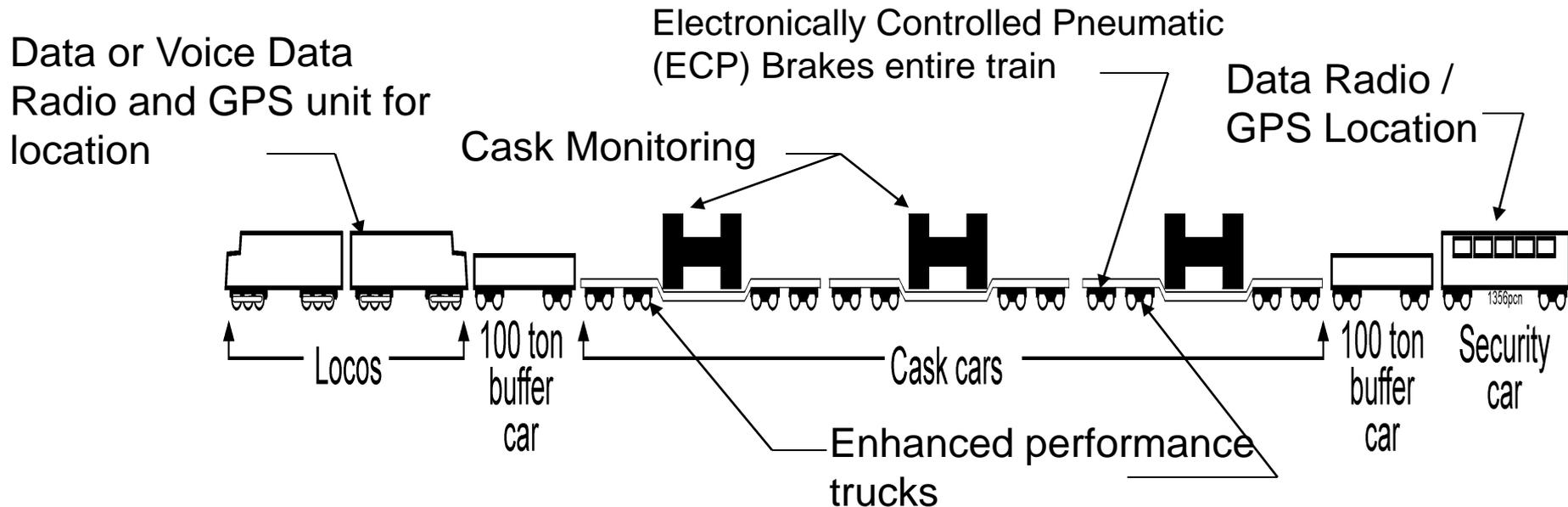


Real Time Monitoring

- Hunting: Lateral Car Body acceleration of 0.26G for 10 sec.
- Rocking: Peak-to-peak roll angles of 5° for 3 cycles
- Bearing Temp.: indication of impending failure
- Vertical Acceleration: peak of 1.0G
- Lateral Acceleration: Peak of 0.75G
- Longitudinal acceleration: Peak of 1.5G
- Wheel flat: Wheel flat indication



Diagram of Typical SNF Train



Defect detection (all cars) including:

Truck hunting, rocking, wheel flats, bearing condition, ride quality, braking performance, vertical acceleration, and longitudinal acceleration.



Benefits of S-2043

- Improved performance
- Reduced probability of derailment
- Allows use of best available technology
- Meets AAR interchange rules



Lead Time to Procure Equipment Meeting S-2043

- S-2043 requires modeling to show equipment being proposed meet the performance standard (3-6 months)
- S-2043 requires construction of a prototype to demonstrate the car can meet the performance standard (3-6 months)
- S-2043 requires the prototype car to be tested with static and dynamic testing (8-12 months)
- Once the car has been tested it is submitted for approval to the Equipment Engineering Committee
- New cars will need to be procured (6-12 months)
- There is a 100,000 mile evaluation period
- Total lead time 2 – 3 years



Dedicated Trains

- Eliminates weak link problem
- Minimizes train handling forces
 - Standard freight car 100 ton = 263,000#
 - SNF Car 125 ton >400,000#



Dedicated Trains Minimize Time in Transportation

- High priority scheduling
- Bypass of classification yards
- Fast acceleration
- Higher sustained speeds possible
- Quicker stopping
- Escorting and monitoring would be easier to provide
- Inspection & maintenance easier to provide



Classification Yard



Security

- Guards should be transported in a separate specially designed personnel car
 - No space in the locomotive
 - Guards will be on train for long periods of time



Summary...

- Rail is a safe and efficient option for the transportation of SNF
- Compliance with S-2043 makes sense
- Dedicated trains make sense
- The sooner DOE makes key decisions regarding the transportation system, the more likely you are to meet your schedule



Thank You

Questions:



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